CLAIMS

1. A disk cartridge comprising:

a disk;

a cartridge body housing the disk to be rotatable and having formed therein a write and/read opening through which a part of the disk is exposed to outside in a range between the inner and outer radii thereof;

a shutter member supported movably on the cartridge body to uncover and cover the write and/read opening; and

a two-way forcing mechanism to force the shutter member toward any selected one of positions to cover and uncover the write and/or read opening.

2. The disk cartridge according to claim 1, wherein the two-way forcing mechanism forces the shutter member in any selected one of directions to cover and uncover the write and/or read opening correspondingly to a position of the shutter member relative to the write and/or read opening.

3. The disk cartridge according to claim 1, wherein the two-way forcing mechanism is provided upstream of the moving direction of the shutter member to uncover the write and/read opening.

4. The disk cartridge according to claim 1, wherein the two-way forcing mechanism is formed from a return helical spring connected between the shutter member and cartridge body.

5. The disk cartridge according to claim 4, wherein the return helical spring

includes:

a first coil portion formed at the middle thereof and from which a pair of arm portions extends; and

a second coil portion provided at the free end of one of the arm portions and wound in a direction opposite to the winding direction of the first coil portion,

the second coil being supported pivotably at a part of the cartridge body while the second arm portion is supported on the shutter member, thereby forcing the shutter member in either direction to cover or uncover the write and/read opening.

6. The disk cartridge according to claim 5, wherein the return helical spring includes an engagement portion bent at the free end of the other arm portion to have a generally horseshoe-like shape and whose portion extending from the second arm portion and/or portion bent parallel to the extension portion form a predetermined angle with the extending direction of the other arm portion, and the engagement portion is engaged on the shutter member.

7. The disk cartridge according to claim 1, wherein the two-way forcing mechanism includes:

a pivoting member supported pivotably on the cartridge body and which is pushed to turn by the pushing portion of the shutter member when the shutter member is moved in a direction to uncover or cover the write and/read opening; and

a forcing member to force the pivoting member to turn toward the pushing

portion,

the pivoting member having:

a first slope which guides the shutter member in a direction to cover the write and/or read opening; and

a second slope which guides the shutter member in a direction to uncover the write and/read opening.

8. The disk cartridge according to claim 7, wherein the pivoting member and forcing member is formed integrally with each other from a leaf spring.

9. The disk cartridge according to claim 1, wherein the two-way forcing mechanism is formed from a leaf spring, the leaf spring including:

a first engagement projection which is engaged on the pushing portion of the shutter member, when the shutter member is moved to a position to cover the write and/or read opening, to hold the shutter member in the position to cover the write and/or read opening; and

a second engagement projection which is engaged in the pushing portion of the shutter member, when the shutter member is moved to a position to uncover the write and/or read opening, to hold the shutter member in the position to uncover the write and/or read opening.

10. The disk cartridge according to claim 1, wherein:

the cartridge body has an insertion front end formed to have a generally semi-circular shape whose center is concentric with that of the disk housed in the

cartridge body; and

the write and/or read opening is formed at a lateral side other than the circular one thereof.

11. The disk cartridge according to claim 11, wherein the lateral side on which the shutter member moves is parallel to the moving direction of the shutter member.

12. A disk cartridge comprising:

a disk;

a cartridge body housing the disk to be rotatable and having formed therein a write and/read opening through which a part of the disk is exposed to outside in a range between the inner and outer radii thereof;

a shutter member supported movably on the cartridge body, having formed in one moving-directional end portion thereof a partially discontinuous engagement hole and which uncovers and covers the write and/read opening; and

a return helical spring including a first coil portion formed at the middle thereof and from which a pair of arm portions extends, a second coil portion provided at the free end of one of the arm portions and which is supported pivotably on a part of the cartridge body, and an engagement portion bent at the free end of the other arm portion to have a generally horseshoe-like shape and whose portion extending from the second arm portion and/or portion bent parallel to the extension portion form a predetermined angle with the extending direction of

the other arm portion,

the engagement portion being engaged in the engagement hole formed in the shutter member, whereby the shutter member is forced in any selected one of directions to cover the write and/or read opening and uncover the write and/or opening.

13. The disk cartridge according to claim 12, wherein in the return helical spring, the first and second coil portions are wound a plurality of turns in directions opposite to each other.

14. The disk cartridge according to claim 12, wherein the return helical spring forces the shutter member in any selected one of directions to cover and uncover the write and/or read opening correspondingly to a position of the shutter member relative to the write and/or read opening.

15. The disk cartridge according to claim 12, wherein the return helical spring is provided upstream of the moving direction of the shutter member to uncover the write and/read opening.

16. The disk cartridge according to claim 12, wherein:

the cartridge body has an insertion front end formed to have a generally semi-circular shape whose center is concentric with that of the disk housed in the cartridge body; and

the write and/or read opening is formed at a lateral side other than the circular one thereof.

17. The disk cartridge according to claim 16, wherein the lateral side on which the shutter member moves is parallel to the moving direction of the shutter member.

18. A disk cartridge comprising:

a disk;

a cartridge body housing the disk to be rotatable and having formed therein a write and/read opening through which a part of the disk is exposed to outside in a range between the inner and outer radii thereof;

a shutter member supported movably on the cartridge body to uncover and cover the write and/read opening;

a two-way forcing mechanism engaged at one end thereof on an engagement portion formed upright on the cartridge body and at the other end on the shutter member to force the shutter member in any selected one of directions to cover and uncover the write and/or read opening; and

a movement limiting portion formed on the moving trajectory of the two-way forcing member to limit the movement of the latter thereby preventing the two-way forcing mechanism from touching the disk.

19. The disk cartridge according to claim 18, wherein the movement limiting portion is formed from an extending peripheral wall formed upright on the cartridge body to define a compartment for the disk.

20. The disk cartridge according to claim 18, wherein the movement limiting

portion is formed from a limitation projection formed upright on the cartridge body.

21. The disk cartridge according to claim 18, wherein the two-way forcing mechanism forces the shutter member in any selected one of directions to cover and uncover the write and/or read opening correspondingly to a position of the shutter member relative to the write and/or read opening.

22. The disk cartridge according to claim 18, wherein the two-way forcing mechanism is formed from a return helical spring engaged at one end thereof pivotably on the engagement portion provided upright on the cartridge body.

23. The disk cartridge according to claim 22, wherein the return helical spring includes:

a first coil portion formed at the middle thereof and from which a pair of arm portions extends;

a second coil portion provided at the free end of one of the arm portions and which is supported pivotably on a part of the cartridge body; and

an engagement portion bent at the free end of the other arm portion to have a generally horseshoe-like shape and whose portion extending from the second arm portion and/or portion bent parallel to the extension portion form a predetermined angle with the extending direction of the other arm portion,

the engagement portion being engaged in the engagement hole formed in the shutter member.

24. The disk cartridge according to claim 23, wherein in the return helical spring,

the first and second coil portions are wound a plurality of turns in directions opposite to each other.

25. The disk cartridge according to claim 18, wherein the two-way forcing mechanism is provided upstream of the moving direction of the shutter member to uncover the write and/read opening.

26. The disk cartridge according to claim 18, wherein:

the cartridge body has an insertion front end formed to have a generally semi-circular shape whose center is concentric with that of the disk housed in the cartridge body; and

the write and/or read opening is formed at a lateral side other than the circular one of the cartridge body.

27. The disk cartridge according to claim 26, wherein the lateral side on which the shutter member moves is parallel to the moving direction of the shutter member.